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CLAIMS

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1. Process for making a thin film starting from a substrate of a solid material with a plane face comprising:

- the implantation of gaseous compounds in the substrate to make a layer of micro-cavities at a depth from said plane face corresponding to the thickness of the required thin film, the gaseous compounds being implanted under conditions that could weaken the substrate at the layer of micro-cavities,
- partial or total separation of the thin film from the rest of the substrate, this separation comprising a step in which thermal energy is added and pressure is applied to the said plane face.

2. Process according to claim 1, wherein said pressure is a gas pressure.

3. Process according to claim 1, wherein said pressure is a mechanical pressure.

4. Process according to claim 3, wherein said mechanical pressure is generated using a piston.

5. Process according to claim 1, wherein said pressure is applied locally on the said plane face.

6. Process according to claim 1, wherein said pressure is applied uniformly on the said plane face.

7. Process according to claim 1, wherein it also comprises bonding of a thickener onto said plane face, after implantation of the gaseous compounds.

8. Process according to claim 7, wherein the thickener is composed of a wafer.

9. Process according to claim 8, wherein the wafer is bonded by molecular bonding with the said plane face.

10. Process according to claim 7, wherein the
5 thickener is formed by deposition of one or several materials.

11. Process according to claim 7, wherein said pressure is applied through the thickener.

12. Process according to claim 1, wherein said
10 pressure is adjusted during the coalescence of at least part of the micro-cavities, to remain slightly above a pressure called the limiting pressure, below which blisters appear on said plane face and above which blisters do not appear on said plane face.

13. Process according to claim 1, wherein
15 coalescence is performed such that the thin film is separated from the rest of the substrate by simply pulling them apart.

14. Process according to claim 1, wherein the thin
20 film is separated from the rest of the substrate by application of a heat treatment and/or mechanical forces.

15. Process according to claim 1, wherein the
25 substrate used as the initial substrate is a substrate that has already been used to produce a thin film according to said process.

16. Process according to claim 15, wherein the previously used substrate is polished to provide a new plane face.

17. Process according to claim 1, wherein the substrate supports one or several homogeneous and/or heterogeneous layers on the side of said plane face.

18. Process according to claim 1, wherein the
5 substrate is composed of one semi-conducting material, at least on the side of said plane face.

19. Process according to claim 1, wherein the substrate comprises all or part of at least one electronic device and/or at least one electro-optical
10 device, on the side of said plane face.

20. Process according to claim 1, wherein the separation of the thin film is delayed by the application of an additional step that consists of applying an additional pressure onto the thin film.

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